

Claims 1 – 20 (including claims 1 – 14 and additional claims referred to as "Patent claims according to main application" and numbered 1 – 6): cancelled

Claim 21 (new): A perfusion system for preserving vitality or regeneration of an isolated organ, said system comprising:

- an organ perfusion chamber;

- a temperature control device;

- storage fluid filled in said organ perfusion chamber, said storage fluid being dialysate;

- a protective cover within said organ perfusion chamber for receiving an isolated organ, wherein said protective cover is surrounded by said storage fluid;

- a dialysate circuit for circulating dialysate to and from said organ perfusion chamber, said dialysate circuit including a dialyzer, an oxygenator, and a dialysate circuit pump;

- a perfusate circuit that includes an outflow perfusate line from said organ perfusion chamber to a reservoir, a perfusate circuit pump for pumping said perfusate, a first perfusate partial flow, a second perfusate partial flow that transports a portion of said perfusate through said oxygenator and said dialyzer in said dialysate circuit to obtain an oxygenated perfusate, and a mixing device for mixing said first perfusate partial flow and said second perfusate partial flow into a mixed perfusate, and a perfusate inflow line that transports said mixed perfusate and/or oxygenated perfusate into an isolated organ stored in said organ perfusion chamber.

Claim 22 (new): The perfusion system of claim 21, wherein said reservoir is a single reservoir in said perfusate circuit and said perfusate circuit pump is a single perfusate circuit pump in said perfusate circuit, and wherein said mixing device is a Y-connector

that receives perfusate from said first perfusate partial flow and from said second perfusate partial flow and transports said mixed perfusate into said perfusate inflow line.

Claim 23 (new): The perfusion system of claim 21, wherein said reservoir is a first reservoir and said mixing device is a second reservoir in said perfusate circuit, wherein said first perfusate partial flow and said second perfusate partial flow are mixed in said second reservoir to said mixed perfusate.

Claim 24 (new): The perfusion circuit of claim 23, wherein said perfusate circuit pump is a first perfusate circuit pump, wherein said perfusate circuit includes a second perfusate circuit pump that pumps said mixed perfusate into said perfusate inflow line.

Claim 25 (new): The perfusion circuit of claim 21, further comprising one or more control valves for regulating flow of said first perfusate partial flow and said second perfusate partial flow in said perfusate circuit.

Claim 26 (new): The perfusion circuit of claim 25, wherein said perfusate inflow line includes a first perfusate inflow line for transporting mixed perfusate and a second perfusate inflow line for transporting oxygenated perfusate, and wherein said one or more control valves enable an independent dosing of mixed perfusate into said first perfusate inflow line and of said oxygenated perfusate into said second inflow line.

Claim 27 (new): The perfusion circuit of claim 21, further comprising a fluid-level indicator for reporting a fluid level of said storage fluid in said organ perfusion chamber.

Claim 28 (new): The perfusion circuit of claim 21, further comprising a temperature control device for maintaining a temperature of said storage fluid in said organ perfusion chamber.

Claim 29 (new): The perfusion circuit of claim 28, wherein said temperature control device is a heating mat disposed in said organ perfusion chamber.

Claim 30 (new): The perfusion system of claim 21, wherein said isolated organ is a liver and said perfusate outflow line is connectable to said vena cava and said perfusate inflow line is connectable to said vena portae.

Claim 31 (new): A perfusion system for preserving vitality or regeneration of an isolated organ, said system comprising:

- an organ perfusion chamber;

- a temperature control device;

- storage fluid filled in said organ perfusion chamber, said storage fluid being dialysate;

- a protective cover within said organ perfusion chamber for receiving an isolated organ, wherein said protective cover is surrounded by said storage fluid;

- a dialysate circulation system for transporting dialysate to and from said organ perfusion chamber, said dialysate circulation system including a dialysate circulation pump;

- a perfusate circulation system that includes an outflow perfusate line from said organ perfusion chamber to a single perfusate circulation reservoir, a first perfusate circulation pump for pumping a first perfusate partial flow through a dialyzer in said perfusate circulation system, a second perfusate circulation pump for pumping a second perfusate partial flow through an oxygenator and a heat exchanger in said perfusate circulation system, a mixing device for mixing said first perfusate partial flow and at least a portion of said second perfusate partial flow into a mixed perfusate, and a perfusate inflow line for transporting perfusate from said perfusate circulation system into an isolated organ stored in said organ perfusion chamber.

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Claim 32 (new): The perfusion system of claim 31, wherein said dialysate from said dialysate circulation system flows through said heat exchanger and into said perfusate circulation system, thereby exchanging heat with said first perfusate partial flow and said second perfusate partial flow

Claim 33 (new): The perfusion system of claim 31, further including a control valve for controlling flow from said perfusate inflow line into said single perfusate circulation reservoir and, as needed, into said isolated organ stored in said organ perfusion chamber.

Claim 34 (new): The perfusion system of claim 31, wherein said perfusate inflow line includes one or more inflows that are connectible to inflow paths on said isolated organ.

Claim 35 (new): The perfusion system of claim 31, wherein said perfusate outflow line includes one or more outflows that are connectible to outflow paths on said isolated organ.

Claim 36 (new): The perfusion system of claim 31, wherein said temperature control device is a heating mat that is disposed within said organ perfusion chamber to maintain said storage fluid to a desired temperature.

Claim 37 (new): A method of maintaining perfusate used in extracorporeal storage of an organ, said method comprising the steps of:

- (a) filling an organ perfusion chamber with a storage fluid that is a dialysate
- (b) maintaining said dialysate in said organ perfusion chamber to a desired temperature;
- (b) providing a dialysate circulation system that receives said dialysate from said organ perfusion chamber;

- (c) providing a perfusate circulation system that divides said perfusate in at least a first perfusate partial flow and second perfusate partial flow;
- (d) transporting perfusate in said second perfusate partial flow through said dialysate circulationsystem, thereby effecting a heat exchange between said dialysate and said perfusate in said second perfusate partial flow;
- (e) mixing said second perfusate partial flow and said first perfusate partial flow to a mixed perfusate;
- (f) transporting said mixed perfusate to said organ in said organ perfusion chamber.

Claim 38 (new): The method of claim 37, said method further comprising the steps of:

- (g) providing a flow control valve between a reservoir in said perfusate circuit and a perfusate circuit inflow line for controlling a dosing of first perfusate partial flow and second perfusate partial flow.